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What you Don't Know Can't Help You: Lessons of Behavioural Economics for Tax-Based Student Aid

Postsecondary tax credits cost federal and provincial governments billions of dollars each year, but are not distributed equitably and may have no proven effect at all in boosting enrolment. A simple change to the tax credits could better target them at low-income families who need them most.

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The Study In Brief

Canada's federal and provincial governments spend a lot of money subsidizing postsecondary students. Tuition and education/textbook tax credits, in particular, cost the federal government around $1.6 billion in 2012 – a sum much greater than the net cost of the Canada Student Loan Program. These credits lower dramatically the cost of attending postsecondary education.

Unlike other programs that support postsecondary education, there has not been a formal evaluation of the effectiveness of these tax measures, but there is good reason to conclude that they are poor policy. The immediate benefits of the credits go disproportionately to students from relatively well-off families, who are not relatively sensitive to the costs of postsecondary education, with students from lower-income families benefiting from them only after they have finished their education and have enough taxable income to claim the credit.

Lessons from economics and from more recent innovations in behavioural economics emphasize that flaws in the design of postsecondary tax credits mean that they are unlikely to have any effect on youths' decisions to undertake or cope with the costs of postsecondary education.

A simple change to the tax credits – making them refundable instead of non-refundable – would go a long way to making them more efficient and equitable. Whereas a non-refundable tax credit can't reduce the amount of tax owed to less than zero, a refundable tax credit can reduce your tax below zero and provide a refund. This change would provide a more immediate benefit to students from low-income families who need it most.

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Canada has one of the world's highest postsecondary education participation rates, boosting productivity and per capita income.

Canadians' high rate of educational attainment stems from a number of factors. Key among them are that a postsecondary (and particularly a university) education provides a large boost to lifetime income and that the upfront costs of postsecondary study – most notably tuition fees, but also compulsory ancillary fees and textbook costs – are generously subsidized by Canadian governments, both via direct subsidies to universities and through a range of student financial-aid programs.

However, there is an overlooked way that governments subsidize postsecondary education not accounted for in government expenditure statements. Postsecondary tax credits cost the federal government roughly $1.6 billion per year, more than the $0.7 billion cost of the Canada Student Loan Program. For the average Canadian university student, the credits are worth more than $2,000 per year, about 40 percent of the Canadian average university tuition fee. For college students, who pay lower fees, the credit amounts are smaller but cover a much larger proportion of total costs. Because these subsidies are labelled tax credits rather than spending, they have escaped the serious scrutiny that is routinely applied to programs with similar goals and budgets.

Both standard economic theory and emerging behavioural economics provide reasons to believe that the tax credits are not targeted at struggling students and do little to boost postsecondary enrolment. Credits are not visible – students, and particularly those from relatively disadvantaged families and neighbourhoods, probably know little about tax credits when making decisions on whether to attend college or university. This is compounded by the fact that because tax credits are non-refundable, youth from lower-income families cannot make use of the tax credits while they are studying, and have to wait until they graduate and are earning enough money to benefit. But it is precisely these youth who would gain most from having more cash in hand while they are studying and whose decision to undertake postsecondary education would be most affected by a lower net cost.

The tax dollars "spent" on these programs should be reallocated to better-designed programs. One leading reform option is to replace non-refundable credits, which count only against the earned annual income that most postsecondary students lack, with a refundable credit that students qualify for, regardless of annual income.

Background: Tax Credits for Postsecondary Education in Canada and the Provinces

Canada has a number of federal and provincial government programs that reduce the cost of postsecondary education. Subsidies paid to postsecondary institutions help them keep tuition fees lower than they otherwise would be. The Canada Student Loan Program (CSLP), along with its provincial counterparts (including Quebec's Aide Financière aux Études), provide students with cash up front when they need it in return for a promise to repay later when they are expected to be earning enough to do so. Most of these provincial programs

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provide some non-repayable assistance to high-need students, and repayments can be delayed or even cancelled for those students experiencing difficulties in repayment.

These forms of assistance are, therefore, also an important subsidy to postsecondary education. Governments also subsidize family savings for their children's postsecondary education through Registered Education Savings Plans (which provide both direct spending and tax benefits). In this *Commentary*, I examine the lesser-known but quite costly tuition and education/textbook tax credits, which give credits on taxes paid for both full- and part-time postsecondary students.[1]

How the Tuition and Education (and textbook) Tax Credits Work

The tuition and education/textbook tax credits reduce taxes owing by an amount determined by the designated spending multiplied by a credit rate – this is commonly known as a non-refundable credit. For federal and for most provincial taxes, the tax-credit rate is the same as the lowest marginal tax rate, currently 15 percent at the federal level. For the tuition tax credit, the credit amount is the total amount spent on postsecondary tuition and compulsory ancillary fees. The education/textbook tax credit amount is a set monthly amount multiplied by the number of months spent studying. The monthly amount is different for full-time and part-time students, and varies widely across provinces. Currently, at the federal level, the education/textbook credit amount is $465 per month for full-time students and $140 for part-time students. Of the provinces, Alberta has the highest monthly credit amount ($628 per month for a full-time student), while Quebec does not have an explicitly equivalent credit.[2]

Like other non-refundable credits, the tuition and education/textbook credits cannot be used to reduce taxes below zero. Given that many students earn very low incomes and many owe no taxes, these credits can be of limited use. But unlike most other non-refundable credits, the tuition and education/textbook credit amounts that cannot be used by the student herself, in the year they were credited, can be transferred to a spouse, parent or grandparent (up to a point). And since 1997, unused amounts can be carried forward to reduce tax liabilities in later years. Thus, the credits do ultimately get "paid" to eligible students, so long as they owe taxes in future.

The tuition and education/textbook tax credits combined have a very large effect on the net financial costs of postsecondary education. Table 1 shows the potential tax effect on students of these credits at the federal and provincial levels for the 2012 tax year. In order to demonstrate more clearly the impacts of the different provincial tax systems, I assume that all students study full time for eight months and that they pay tuition fees of $6,000, roughly the 2012/2013 university average, plus compulsory fees. Figure 1 shows similar figures, but

1 There are several other education-related tax credits in Canada, including the federal student-loan interest credit and deductibility of scholarship income from taxation, along with the increasingly common provincial graduation-retention tax credits. Tax measures related specifically to postsecondary institutions, such as exemptions from GST or property taxes, which apply in some areas, or tax credits to support employment of co-op students, also likely contribute somewhat to lowering postsecondary education costs. For those interested in the RESP system, Milligan (2002) gives a useful analysis. Graduate tax credits are a fairly recent measure introduced in a number of provinces, but have attracted surprisingly little attention. They are discussed in Essaji and Neill (2010), but are outside the scope of this paper.

2 Quebec, however, does have other tax measures related to postsecondary students that mimic education/textbook credits. See Neill (2007) for more detail.

Table 1: Effects of Tuition and Education Credits on the Cost of an Average Year of Undergraduate University Education, 2012 Academic and Tax Year

	Tuition Amount	Part-time Ed. Credit	Education Amount	Total Credit Value	Tax Credit Rate	Tax Saving (inc. federal)	Total Tax Saving	Net Direct Cost
				Dollars (except Tax Credit Rate)				
Federal	6,000	140	465	9,720	15%	1,458		
Newfoundland	6,000	60	200	7,600	7.7%	585	2,043	3,957
Prince Edward Island	6,000	120	400	9,200	9.8%	902	2,360	3,640
Nova Scotia	6,000	60	200	7,600	8.8%	668	2,126	3,874
New Brunswick	6,000	120	400	9,200	9.1%	837	2,295	3,705
Quebec*	6,000	-	0	6,000	20.0%	1,200	2,417	3,583
Ontario	6,000	151	506	10,048	5.1%	507	1,965	4,035
Manitoba	6,000	120	400	9,200	10.8%	994	2,452	3,548
Saskatchewan	6,000	120	400	9,200	11.0%	1,012	2,470	3,530
Alberta	6,000	202	672	11,376	10.0%	1,138	2,596	3,404
British Columbia	6,000	60	200	7,600	5.1%	385	1,843	4,157

Note: Assumes tuition fees of $6,000 (roughly the 2012/2013 Canadian average undergraduate fee) and full-time study for eight months, in order to compare the value of the tax credits across provinces for individuals paying the same tuition fee. Total tax savings are equal to the amount by which federal and provincial taxes combined would be reduced. Since the credits are non-refundable, taxes owed would have to be greater than the credit in order to claim the full amount.

* Due to the 16.5 percent Quebec abatement, the effective federal tax-credit rate for Quebec residents is 12.525 percent instead of 15 percent. The Quebec government has recently announced that its education tax-credit rate will fall from 20 percent to 8 percent, as part of a package of changes to tuition fees and student financial aid (See http://www.mesrst.gouv.qc.ca/actualites/affichage-des-nouvelles/article/1227). This would reduce a full-time student's total tax saving from $2,515 to $1,759. For students paying Quebec fees, it would increase direct costs by just under $350.

Sources: Author's calculations using information contained in 2012 federal and provincial tax packages.

using the average tuition fee paid in each province as the baseline.[3]

As Table 1 shows, the credits reduce the taxes paid by this hypothetical university student by more than $2,000 per year compared with baseline taxes in all provinces but British Columbia. The variation across provinces is caused by: (i) differences in their eligible education rules; and (ii) differences in provincial tax-credit rates. The least generous tax credit is in British Columbia, where a low monthly

3 In its 2012-13 tuition and living accommodation costs survey for full-time students at degree-granting institutions, Statistics Canada reports that the average tuition fee for Canadian undergraduates was $5,581 and compulsory ancillary fees averaged $750, for a total of $6,331.

credit amount ($200, rather than $465 at the federal level) combines with a low tax-credit rate to keep the taxes saved for a student to $1,843. At the opposite end of the spectrum, tax credits would save Quebec, Alberta, Manitoba and Saskatchewan students about $2,500.

Overall, potential tax savings for students are large relative to Canadian average university tuition fees – between 31 percent and 43 percent of their average 2012/2013 cost. Since the education/textbook tax credit is simply a function of the number of months of study, the tuition and education/textbook tax credits combined pay for a considerably larger proportion of the tuition fees for programs with lower fees and for students studying full time rather than part time. College students typically save a larger proportion of their total fees than university students – tax credits account for at least 60 percent of the average college tuition in all provinces (Essaji and Neill 2010).

Tuition fees differ quite substantially across provinces, resulting in different savings on fees, as shown in Figure 1. In Manitoba, in particular, tax credits can reduce overall fees by half. Alberta's generous tax credits mean that even though it has higher tuition plus compulsory fees than British Columbia, fees net of credits are actually lower.

Ignoring tax credits leads to misleading conclusions on the impact of changes in postsecondary education costs. Usher and Duncan (2008) show that while tuition fees rose in real (inflation adjusted) terms by 26 percent between 1997/1998 and 2007/2008, net tuition rose by only 19 percent once the basic tuition and education credits were taken into account.

Fiscal Cost

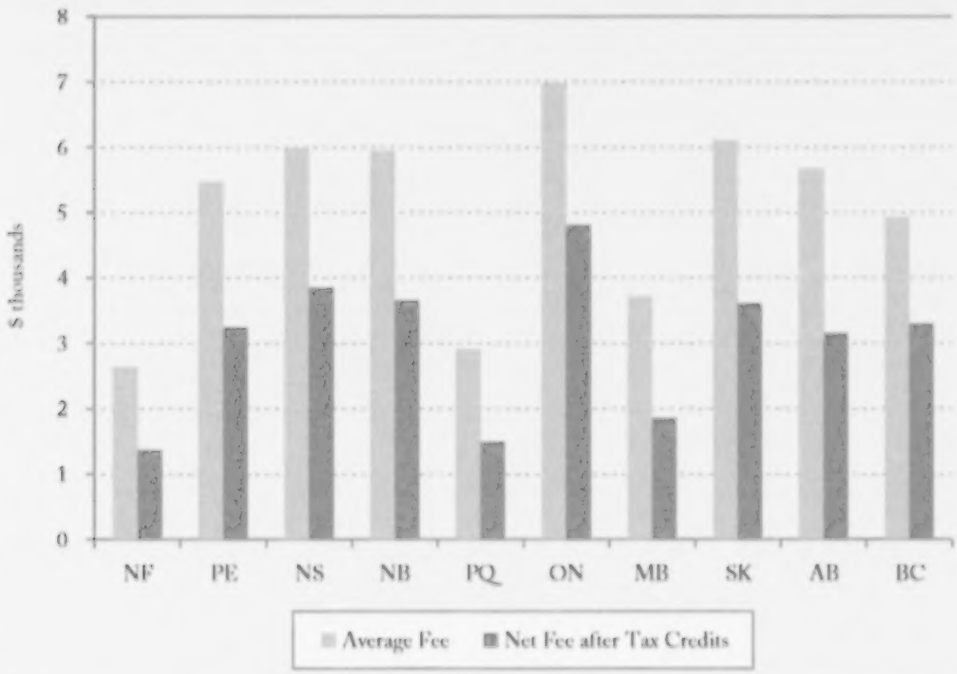
The tuition and education/textbook tax credits together cost the federal government around $1.6 billion in the 2012 tax year (Department of Finance 2012). These subsidies are large compared with other federal spending on aide to postsecondary students. By comparison, the total Canada Student Loan Program net cost (not including the student loan-interest credit) was $700 million[4] in 2011/2012, with disbursements under the Canada Student Grants Program (CSGP) amounting to another $600 million (Office of the Superintendent of Financial Institutions in Canada 2012). The total cost of the RESP system was also around $600 million in 2011/2012.

Figure 2 shows how federal government "expenditures" on the tuition and education/textbook tax credits have grown in inflation-adjusted terms since 1994. The most important policy changes over this time have been: (i) increases in the education tax credit in 2001 and 2006 (when the textbook tax credit was introduced); (ii) reductions in the tax-credit rate from 17 percent in 2000 to 15 percent by 2007; and (iii) the introduction of the carry-forward option in 1997.

Almost all the federal spending increase as a result of these credits since 2001 has been in transfers or carry-forwards. Even the increase in the education/textbook credit in 2006 had little effect on contemporaneous claims. It would appear, then, that students are increasingly unable to use the credits to offset current taxes and are forced to defer their benefits until later years or transfer them to eligible family members. Indeed, by 2012

4 In 2011/12, disbursements of loans and grants under the CSLP and CSGP to students outside Quebec and the Territories were $2.2 billion, but since these were loans, their cost to the government must be calculated net of expected repayments. Key expenses in 2011/12 were the in-study interest subsidy ($127 million), the repayment assistance program ($160 million), bad debt expense ($360 million) and administration expenses ($140 million), partially offset by net interest payments ($355 million) (Office of the Superintendent of Financial Institutions in Canada, 2012). Lower interest rates have kept the costs of the CSLP lower in recent years.

Figure 1: Average Undergraduate Fee (including average compulsory ancillary fees) and Net Fee after Tax Credits, by Province (using 2012/13 fees and 2012 tax systems)



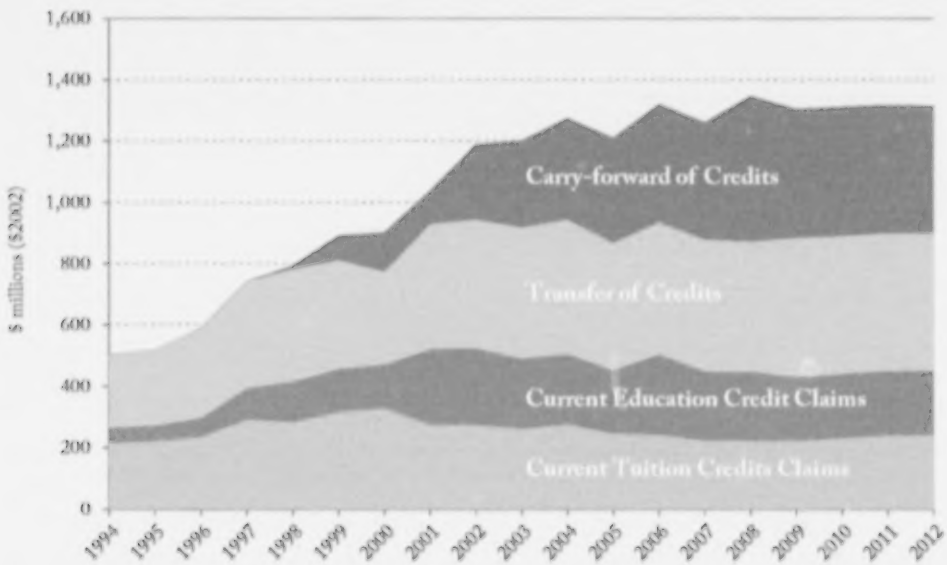
Notes: The average fee is the average tuition fee for undergraduate students in each province, plus their average compulsory ancillary fees, as calculated by Statistics Canada. The net fee is calculated after applying the 2012 tax credits (as per Table 1). Note that some portion of compulsory ancillary fees is not eligible for inclusion as part of the tuition fee-credit amount, so actual credit amounts may diverge slightly from those shown above. Data on college fees are not easily available on a comparable basis.

about two-thirds of the tax expenditures on these credits in any given year was not used to reduce student tax bills in the year the credit was earned, but was claimed either by parents, grandparents or a spouse, rather than the student, or went to credits accumulated in an earlier year and carried forward.

Evaluations of the Canada Student Loan Program and other spending-side student aid measures are common. There has, however, been no government evaluation of whether the tax credits are achieving their objectives.[5]

5 The only study resembling a tax credits evaluation is in an annex to the federal finance department's 2006 Tax Expenditures and Evaluations, titled "Investing in Post-secondary education: the impact of the income tax system," which presents research suggesting that the tax system overall discourages investments in postsecondary education because of our graduated tax system. However, it notes that, when combined with spending side measures, the tax system does provide a strong inducement to students pursuing postsecondary education. Nowhere does it examine any empirical evidence.

Figure 2: Real Value of the Federal Tuition and Education Credits, by Type of Claim ($2002)



Sources: Department of Finance (2012), deflated by CPI (Cansim series v41693271). The education credits include the textbook credit. Figures for 2010 and beyond are projections. Includes all tax-credit claims from both college and university students.

Why Should Governments Provide Aid to Students Anyway?

It is difficult to find any stated policy justification for the tuition and education/textbook tax credits (Box 1). Perhaps the clearest statement is from Quebec, which notes that the tuition credit "is intended to recognize that tuition fees paid in order to obtain a diploma or occupational training as well as examination fees paid to a professional order or for examinations required by such order are expenses incurred with a view to entering the labour market and, consequently, to earning income (Tax Expenditures 2010)." This suggests that the credits are meant to ensure that the tax system treats investments in education neutrally.

Tax systems can lead to lower than economically optimal investment levels if they tax income earned, but do not allow exemptions for the initial investment spending. It is generally considered desirable for tax systems to treat investments neutrally so that they are not artificially encouraged or discouraged. Gunderson and Thirsk (1994) show that when one assumes a constant marginal income tax rate, a neutral treatment of educational investment simply requires that governments allow out-of-pocket spending on education, such as tuition fees, to be deducted from income for

Box 1: What Is the Purpose of the Education and Tuition Tax Credits? And Does it Matter?

There is not much agreement on the original or current purpose of education and tuition tax credits. They were initially introduced at the federal level in 1960 as a tax deduction to recognize that those who worked while studying part time faced additional expenses. Since then, the deduction has become a credit, transferrable and able to be carried forward. The original intent of the program is not relevant to today's program. It is not farfetched to say that the ultimate goal of the credits is to secure votes for the government. Evaluating the success of these credits in achieving those political goals is not the purpose of this paper.

One intention of these credits today is to reduce the costs of postsecondary education. While the tuition credit does reflect an actual cost of education, the education/textbook credits do not. They are estimated to be larger than education's other associated costs (Department of Finance 2006) and are not linked to expenditures in any way. The difficulty in identifying an objective for these credits is highlighted by the fact that the textbook tax credit, introduced in the 2006 Budget, was stated to be intended to help meet actual textbook costs, while in the 1998 Budget, the education credit was said to help students with "their non-tuition costs such as books and living expenses." It is not easy to see why two separate but operationally identical credits are needed to help students with textbook costs – if textbook costs were increasing, why not simply increase the education credit? Nor is it sufficient to evaluate whether the policy has had the effect of reducing education costs unless there is a valid economic or social policy reason why we should want lower education costs.

This *Commentary* evaluates the credits in terms of their performance in meeting the two standard criteria of welfare economics: improving equity and improving efficiency. The efficiency gain that the tax credits could make is: if without them too few youth would pursue postsecondary education compared to some optimum level. Thus, assessing the credits in regard to these two criteria amounts to an evaluation of (a) whether the credits go predominantly to youth from relatively poor families (equity) and (b) whether they increase enrolments at universities and colleges (efficiency).

Despite the fact that there are no clear and definitive statements of the original goals of the tuition and education tax credits, it is not unreasonable to use these criteria. In any case, there are government statements that support the notion that raising enrolments is a goal of the credits. The only stated goal of the textbook tax credit is "[t]o encourage Canadians to pursue postsecondary education" (Budget Speech 2006). In a similar vein, the Department of Finance's Tax Expenditures and Evaluations (2006: 63) report also describes education's spillover benefits as the key justification for "government spending on education and tax measures targeted at students" to "encourage individuals to engage in more education than they would" otherwise.

taxation purposes. This is roughly what the tuition credit does.[6] But the education credit is not needed to ensure tax neutrality.

That said, any notion that the tax credits' purpose is to ensure neutral treatment of education investments is belied by the other extensive subsidies provided to higher education through federal and provincial direct spending, as well as other tax measures such as RESPs. Collins and Davies (2003, 2005) show that, taken together, there is a very large net subsidy to postsecondary education in Canada.

It is more realistic to see tax credits as a way to reduce education costs, which is consistent with the federal government's 1998 Budget statement that the aim of the education/textbook tax credit is to "help with their non-tuition costs such as books and living expenses."

The Rationale for Government Subsidies for Postsecondary Education

There are two broad reasons economists use to justify government intervention. One is that, left to itself, the private economy will distribute resources in an unfair way. The other is efficiency: for a number of reasons, private decisions will produce outcomes that do not maximize economic activity per person. Both provide some justification for providing aid to postsecondary students.

On the equity front, students generally earn low incomes and tend to have little in the way of savings to pay for their living or education costs. They are, therefore, likely to be worse off than the average Canadian. On the other hand, the same people who go on to postsecondary education earn higher incomes on average, over their lifetimes, than those who do not. So the equity justification is really for governments to help students out *temporarily*, while they're studying, with an expectation that they will be paying that help back once they start earning sufficient income. In addition, postsecondary students come disproportionately from families at the higher end of the socioeconomic spectrum. There is, therefore, little rationale for providing tax credits to students based on equity considerations.

The efficiency arguments are stronger and have two key prongs. The first is the "spillovers" or "positive externality" argument: that there are society-wide benefits from having a highly educated workforce, but these won't be factored into an individual's decision to go on to further study. These benefits may include lower crime rates, more civic engagement, more rapid dispersion of knowledge and, therefore, stronger productivity growth across society. A young person pondering whether to study for another year will weigh the costs against the benefits, and has no reason to consider the benefits to society. There may be people for whom the private benefits of study don't outweigh the costs, but for whom the total benefits, including the spillovers, would outweigh the costs. It is economically efficient for these people to continue studying.

The second efficiency prong supporting government postsecondary education assistance is the "credit constraint" argument. It was first explained by Milton Friedman (1955), who pointed out that investing in education is not like investing in a house or a factory because it doesn't necessarily result in something that can be sold. As a result, one cannot easily get a loan for the investment, because there is no collateral. Combined with the reality that most people study when they are relatively young and have very few assets, it means there are likely many young people for whom it makes

6 This would be exactly correct, assuming a constant marginal tax rate equivalent to the tax-credit rate – it therefore, applies very well for Alberta, but less so under the federal tax system with its progressively increasing marginal tax rates.

economic sense to forgo immediate employment income and instead pursue their education, but who can't afford it and are unable to borrow enough to pay for it. Here, the economically efficient decision is not made because young people are constrained by a lack of credit.

Both of these "market failures" mean that if decisions are left to youth alone, too few are likely to go on to postsecondary education to their, and society's, ultimate detriment. So if government policy can increase post-secondary enrolments (compared to the purely private outcome), then it may be worthwhile.

How Can Government Influence Individual Postsecondary Enrolment Decisions?

Box 2 explains the standard economic view of how individuals make decisions to pursue postsecondary studies. If governments want to increase the number of postsecondary students they need to shift one or more of the levers described in the box. The most straightforward ways to do this are: (i) provide loans to credit-constrained students and (ii) reduce the costs of education, generally, by means such as tax credits.

None of this, however, tells us how much the government should be aiming to boost enrolments or the required cost-reductions to achieve that increase. It is important to keep in mind that the argument for subsidizing postsecondary education based on externalities rests on the premise that such subsidies will encourage more youth to pursue postsecondary education. Clearly, there is no case for subsidizing an activity if it does not lead to the desired result.

In the standard economic model, individuals are forward looking, determining the likely range of incomes over their life-cycle not only if they stop studying upon high-school graduation, but what they would earn if they went on to university for one, two, three or four years, did postgraduate work, or went to college. In the model, they could determine how much they would enjoy each program and the future job/careers they could have as a result. They could discount those future benefits to value them in present-day dollar terms.[7]

It's not surprising that when psychologists and behavioural economists look at how people make decisions, their findings don't reflect the economic model.

Economists have tended to continue working as if people don't deviate systematically from the decision that should have been best for them. Some people make mistakes but, on average, they get it right. And our policies are normally designed with that in mind. But recent work in behavioural economics suggests that this is not always true, particularly for large, one-off decisions like those about education. People systematically make "irrational' choices" – that is, choices that do not maximize their expected lifetime utility. Thaler and Benartzi (2004) note that, "behavioural economists have demonstrated that people have inconsistent attitudes to risk and uncertainty, and discounting that leads them to make decisions that they may regret later in life." These deviations from a strict, utility maximizing model of economics include:

- Weak information gathering and processing skills: Shafir (2008: 19) notes that, "A standard assumption is that consumers are attentive and knowledgeable, and typically able to avail themselves of important information. Instead, there often appears to be a rampant ignorance of options, program rules, benefits, and opportunities, and not only among the poor or

7 As someone who teaches discounting to very smart first-year university students, I can assure you that conducting even a very simple version of this "present value" calculation is not something that comes easily to most people. And this is probably the simplest part of the calculation!

Box 2: How Can We Affect Decisions to Pursue Postsecondary Education? Standard Economics

Economists view the decision to go to university or college primarily as an investment decision. That is, it involves taking on some cost now to achieve some gain in the future. These costs and benefits can include non-financial factors: economists do not preclude the possibility that some people might enrol because they simply enjoy studying, not because they expect to earn more money once they graduate. But if one asks how financial aid affects enrolment decisions, then it's easiest to focus on simply those things that are denominated easily in dollar terms.

The education investment model says that an individual will enrol in postsecondary education if the benefits a student expects to get from an increase in their lifetime income outweigh the estimated costs. These costs include both direct costs, tuition fees minus financial aid, and indirect costs, the money an individual could have earned by working instead of studying.

There are, though, a few wrinkles in this economic theory application. The main ones are:

Discounting: for any investment, the total dollar value of future benefits has to be bigger than the total dollar value of the current costs to make it worthwhile. That is, the future benefits have to be discounted.

Credit constraints: even if an investment is worthwhile, someone may be unable to undertake it if they lack the cash or the ability to borrow to pay for it. This is likely to be a problem for young people wanting to invest in an intangible, such as education (Friedman 1955).

Riskiness: decisions based on estimates of likely future earnings are uncertain. To the extent that people try to avoid taking on costs now in return for a future risky payoff, they will be less inclined to pursue postsecondary education (see, for instance, Guillemette 2006).

Lack of information: beyond simple riskiness, high school students and their parents may lack accurate information about the costs and benefits of postsecondary education.

the uneducated." Furthermore, initial beliefs or default positions are often "anchored," making it difficult to overturn incorrect beliefs (Tversky and Kahneman 1974). Information gathering and processing also seems to be a function of social factors and group membership (Bertrand, Mullainathan and Shafir 2006).

- Impatience: people exhibit more impatience, particularly over relatively short horizons, than expected by economists or themselves. Loewenstein and Thaler (1989) offer this as a reason why high-school dropout rates fell in West Virginia when dropouts were threatened with loss of their drivers' licences.
- Status quo or default bias: small administrative costs (such as being required to fill out a form to gain a benefit) and switching default options (such as the default choice of saving rate for a program of employer-matched retirement saving program), can have unexpectedly large consequences (Thaler and Sunstein 2008).
- Mental accounting: people tend to compartmentalize funds for particular activities, so that having a savings account specifically designated for education could increase spending on education compared with having savings in an undesignated account (Thaler 1992).

- Loss aversion: people are more concerned about losing something they already have than about the possibility of gaining something they do not have (Tversky and Kahneman 1991).

This is only a partial (and fairly informal) list, but includes those factors that are most relevant for examining the effectiveness of tuition and education/textbook tax credits.

Why Tax Credits Likely Don't Work: Standard and Behavioural Economics Lessons

As with many other tax-credit programs, there has never been any formal evaluation of education/textbook and tuition tax-credit programs. We have very little notion of whether the programs are effective in meeting their ostensible ends of (i) providing financial support to postsecondary students, or (ii) increasing postsecondary enrolments. Indeed, I argue below that the tax credits are not effective at meeting either objective.

The Distribution of the Tuition and Education/Textbook Tax Credits

Since tuition and education/textbook tax credits are non-refundable, they cannot benefit any student who does not owe taxes. Some 20 percent of taxfilers in 2009 reported an income of $10,000 or less. Few of these could claim the tuition and education credits for themselves or their children if they were pursuing higher education. In fact, almost one-half of all the benefits from the education/textbook and tuition credits that are paid out to students (rather than to eligible family members) go to people earning more than $30,000 per year (Figure 3). It is likely that most of these are part-time students when they claim the credit.

Very few postsecondary students are over the age of 40, but just over 20 percent of all the tax benefits paid to students or former students go to this population group (Figure 4). This is likely due to two factors. Older students have a higher income and are better able to make more immediate use of the credits. As well, the recent rapid growth in the percentage of total tax expenditures that are carried forward (Figure 2) suggests that people who are no longer studying are claiming a large and increasing proportion of education/textbook and tuition credits.

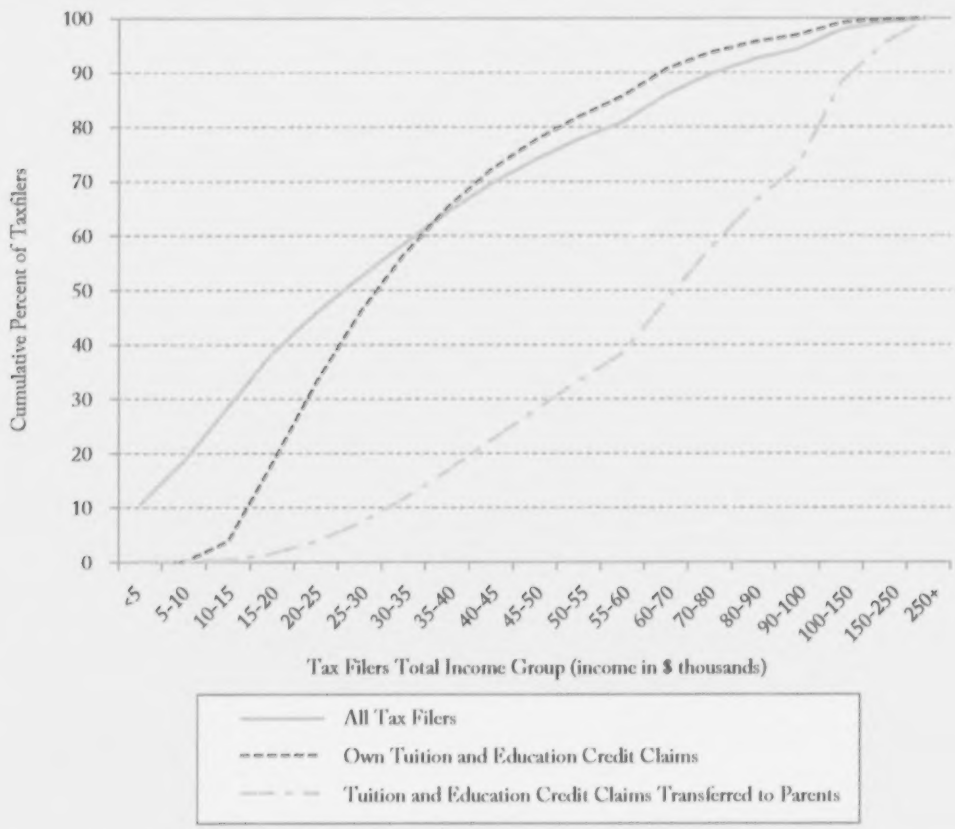
Meanwhile, those who are delaying claiming tax credits until after graduation are more likely to come from relatively poor families. Figure 3 shows that although only 10 per cent of tax filers have an income above $80,000, they account for about 42 percent of the total tuition and education credits that are transferred to parents (or grandparents and spouses). About one-half of all tax filers have incomes below $30,000, but they use only 7 percent of all tuition and education credits transferred to parents.

Without the parental transfer, few students would be able to take advantage of the education and tuition credits while they remained in school full time. But the possibility of transferring credits to parents doesn't help those parents who do not pay taxes. Without the carryforward provision, the bulk of postsecondary students who had no parent earning more than $30,000 per year would not ever be able to use the credits.[8] Even with the carryforward, the credits benefit those from relatively low-income families only after the student has graduated, when for many they are not as needed though no doubt still welcome.

These design flaws could be solved simply by making the credits refundable. Refundability would help ensure that the benefits go more quickly to

8 This is because individuals earning under $30,000 pay little tax. The exact cutoff depends on family composition and other factors.

Figure 3: Cumulative Percentage of Tax Filers Claiming Tuition and Education/textbook Tax Credits (on Behalf of Self and Transferred to Parents), by Total Income Group, 2008/2009 Tax Year



Sources: CRA Income Tax Statistics (2011), Final Table 2. All tuition and education/textbook tax credit claims are included, from both college and university students.

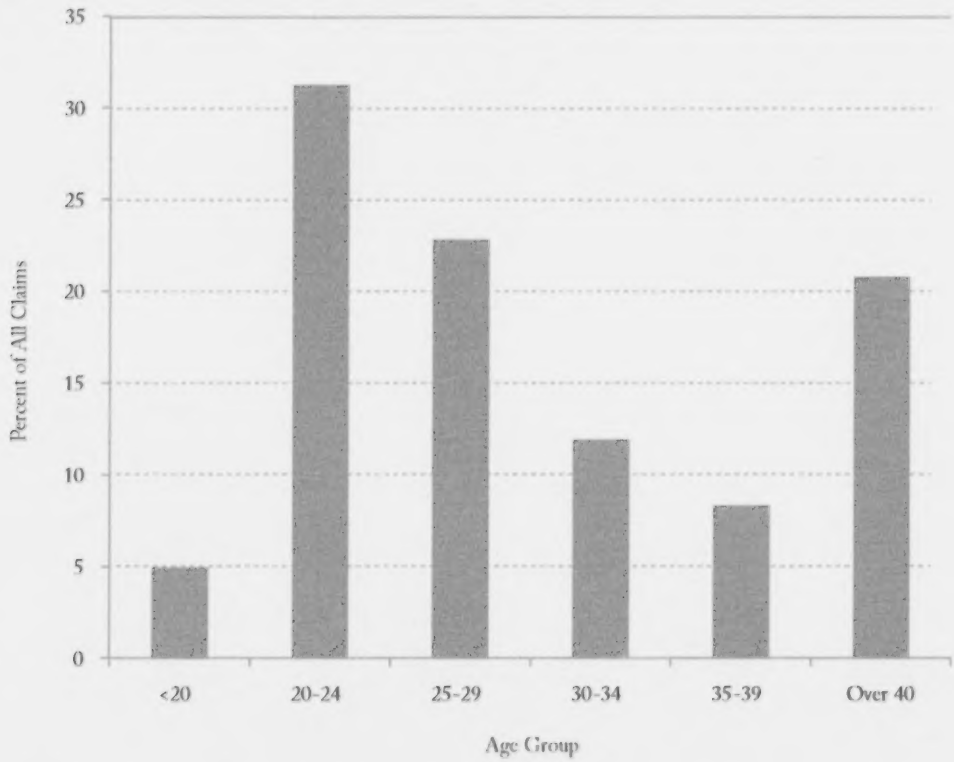
students who need them most, even though they would come at the end of the academic year after the expenses had been incurred. However, because youth from higher-income families typically attend more expensive and longer postsecondary programs than do youth from lower-income families, the benefits from the tax credits would still go disproportionately to relatively advantaged youth (Essaji and Neill 2012).

Substituting refunds for credits would also greatly simplify the required tax forms – the carryforward and the parental transfer sections would be eliminated. The GST/HST credit is already refundable, so it is feasible administratively to make this credit refundable as well.

Do the Tax Credits Boost Postsecondary Enrolments?

There are no studies in Canada on the effectiveness of tax-credit programs in raising enrolments, but there are two studies of similar though less generous programs in the United States. Long (2004) finds no enrolment effect from the Hope and Lifetime

Figure 4: Distribution of Own Claims of Tuition and Education/textbook Tax Credits, by Age Group



Sources: CRA Income Tax Statistics (2011), Final Table 4. Applies to all claims of tuition and education/textbook tax credits on own behalf, including college and university students.

Learning tax credits. However, she suggests this could be due to poor information on the programs and the fact they target primarily middle-income families who may not be on the margin of enrolling.[9] Turner (2011) finds that the American Opportunity Tax Credit (AOTC), which benefits students from both lower- and higher-income families more than the Hope credit, stimulates enrolments at roughly the same rate as would an increase in grant aid. Dynarski, Scott-Clayton and

9 These US federal programs provide a non-refundable tax credit to postsecondary students. Both go primarily to middle- and higher-income families, with the Hope credit providing a maximum credit value of $1,500 (100 percent of the first $1,000 in fees paid, plus 50 percent of the net $1,000) for two years, while the Lifetime Learning credit giving a credit worth 20 percent of fees up to a total of $2,000 over a lifetime. Canadian tax credits are larger both in dollar terms and as a percentage of headline tuition fees.

Wiederspan (2013) note that part of the reason for the different findings may be that unlike Hope, the AOTC is refundable, enabling it to get money to lower-income families, who are relatively price responsive. US studies routinely find that students are responsive to higher tuition fees – the consensus is that a $1,000 increase reduces enrolments by between three and six percentage points (Heller 1997), while an increase in non-repayable financial aid increases enrolments by a smaller amount (Dynarski 2000).

Taken together, these studies suggest that tax credits should not be expected to have as large an effect on enrolments as do the better advertised tuition-fee sticker prices.

In Canada, university sticker price hikes seem to have a smaller enrolment impact than in the United States.[10] Coelli (2009) finds that enrolments among students from low-income families tend to increase when tuition fees go down, and Neill (2009) finds the same tendency, though with a smaller overall response for children whose parents have some postsecondary education, but not a university degree. Neither finds any response to higher fees among students at the upper end of parental income/education distribution.

Palameta and Voyer (2010) also show experimental evidence that groups traditionally under-represented in postsecondary institutions – those from low-income backgrounds or whose parents do not have a postsecondary education – respond more to price changes than do better-off students.

Overall, only youth from lower- to middle-income families appear to be sufficiently responsive to changes in price to produce some impact on enrolment. But recent behavioural economics findings tell us that tax-credit structures make them particularly ineffective for precisely those students. I outline these lessons below.

Lesson 1: What People Don't Know Can't Influence Them

Both standard economic theory and behavioural economics recognize that a program is unlikely to be effective if it is not well-known. This is a concern in postsecondary education, where there is evidence that the sticker price is both much better-known and more influential in enrolment decisions than net price after all financial aid, including tax credits, is taken into account. This problem is likely to be exacerbated when there is a range of different programs, requiring people to go to a number of different sources to find the total net cost.

Finding information on tuition and education/textbook tax credits outside of the tax forms themselves is not easy. At the time of writing, the credits are not mentioned on the federal government's flagship Canlearn website, which Frenette and Robson (2011: 37) describe as providing "searchable information on education programs, education funding sources (including loans and both private and public scholarship programs) as well as interactive tools to estimate education costs and loan eligibility." To its credit, the Ontario Student Assistance Program website now includes the value of the tax credit in its estimated net cost of postsecondary education. To my knowledge, there is no other readily available student aid brochure or website that does this. The credits are also not advertised by the universities, including on their financial aid websites. It is thus very easy for students to identify the sticker price of a particular college or university program – the

10 The studies are not as well equipped to examine college enrolments, since data on college tuition fees is not as readily available as is data on university tuition fees.

information is readily available on institutions' websites – but quite difficult to determine the actual cost net of tax credits.

There is no direct evidence about the extent students and/or their parents are aware of the tuition and education/textbook tax credits, nor whether they know how much these credits are worth. Golombek (2007) suggests that the textbook tax credit was very little known outside the tax community in its first tax year. It is true that the tuition and education credits have been in place for some time now, so that knowledge of them is likely becoming more widespread. However, it is likely that they are least well-known among the youth whose postsecondary decisions are most amenable to influence by financial factors.

Behavioural economics further emphasizes that knowledge is determined by social and contextual factors (Bertrand, Mullainathan and Shafir 2006). Parents who benefited from the credits are at least likely to be aware of their existence, even if they don't know their monetary value.[11] Parents who did not go on to postsecondary education, or themselves do not use these credits to reduce their taxes may not know about them.

Knowledge of the overall costs and benefits of postsecondary education varies considerably across families. Usher (2005) finds that adults in low-income families overestimate the costs of university by 82 percent. High-income families also overestimate the costs, but only by some 33 percent. Lower-income families also underestimate the earnings of university graduates. He finds these mistakes are large enough that adults from low-income families believe there are negative lifetime returns to university, when in reality there are substantial and positive gains.

Oreopoulos and Dunn (2013) report that Toronto high-school students in relatively low-income areas, after screening a three-minute video on available financial aid and receiving access to a financial-aid calculator, were more likely to believe that they would qualify for financial aid and to say that they planned to get at least a college education. They also found that the positive impact was greater among those who had initially reported they were unlikely to pursue postsecondary education.

Frenette and Ford (2012) and Oreopoulos and Dunn (2013) suggest that the weak knowledge levels of youth from lower socioeconomic backgrounds, combined with the findings that early views become hard to change once anchored, highlight the importance of having programs that pay attention to early marketing of postsecondary education's benefits.

This research suggests that it is precisely those students who might be the most price-responsive – those from lower income and socioeconomic backgrounds, or those whose parents did not themselves undertake postsecondary education – that typically have the poorest knowledge of postsecondary education's costs and benefits and about financially helpful programs like tax credits.

Lesson 2: Delaying a Cash Payment Reduces Its Incentive Effects by Much More Than One Might Expect

The main concern student organizations have with tuition and education/textbook tax credits is that they do not provide funding to students when it is needed most, often coming more than nine months after tuition fees have been paid. For students from low-income families, the benefits arrive, at best, some four years after the initial fee

11 Although it is entirely anecdotal, I have asked a number of recent PhD graduates in economics to place a value on the credits that they had already claimed. All substantially underestimated how much the credits had saved them in taxes per year of study.

payment when graduates are likely to be in the workforce. Recognizing that even graduates might have difficulty repaying student loans, governments in several countries have introduced income-contingent repayment of loans in recent decades.[12]

Income-contingent payment of grants – with the grants paid being smaller the lower is the student's current and post-graduation income – makes very little sense. Yet this is what the Canadian education and tuition tax credits do. This increases the riskiness of the investment in postsecondary education, and it increases it most for precisely the groups that are least well positioned to take on that additional risk.

In standard economic theory, delays in receiving monies owed makes them worth less. For example, having to wait a year for a $1,000 payment at a 5 percent discount rate makes it worth only $952. Having to wait four years, until after graduation, to receive a $1,000 payment would make it worth $823. For someone who has to wait until after graduation to benefit from the tax credit, it is worth roughly 14 percent less than it is to someone whose parents can claim it almost immediately.

But behavioural economists suggest this might understate the costs of delay. Thaler and Benartzi (2004) note that: "[I]t is often observed that the patterns of people's choices imply that much larger discount rates are applied to the distant future than to the near future. This can lead people to make decisions that hurt them later in life, such as saving too little for a comfortable retirement." Dynarski and Scott-Clayton (2006) point out that teenagers making education decisions can hardly be expected to make upfront sacrifices to get benefits in the future, with greater uncertainty over the benefits making the trade-off even harder.

The non-refundability of tax credits ensures that payments are delayed most for precisely those who need them up front the most, for whom any delay substantially reduces their value and who are most responsive to changes in the cost of postsecondary education.

Lesson 3: Distributing Benefits to The Wrong People Weakens Efficiency Gains

The only efficiency argument for aid to students is that it will stimulate more enrolments. But the vast bulk of tuition and education/textbook tax credit benefits goes to individuals whose parents are at the top end of income distribution. And there is precisely no evidence in Canada that youth whose families are at the top end will respond to a lower cost of education by increasing their education. Therefore, the vast bulk of spending on these tax credits is simply a transfer of money to families at the upper end of the income distribution range, in return for no gains in efficiency. This is simply wasteful.

Are There any Benefits to the Tax Credits?

The benefits of tax credits, particularly compared to those in the United States, are that they are relatively easy to understand, simple to apply for and have low administrative costs. The Canada Revenue Agency (CRA) has a straightforward process in place for verifying credit eligibility and calculating benefits. Using the tax system for this purpose is more efficient because it means there is no requirement for a separate program with its own bureaucracy, as is the case with existing provincial student loan programs. If one wanted to set up a student aid program from scratch, with aid amounts dependent on parental income and tuition fees paid, and that got to absolutely every eligible student without a tedious application process, then one

12 See Guillemette (2006) for a discussion of the benefits of an income-contingent loan system in the Canadian case.

could model it on the CRA's system of refundable tax credits.

One possible positive effect of the current postsecondary student tax credit regime, from a behavioural perspective, is that it benefits students' parents. Parents play an important role in helping youth to make decisions about continuing on with their studies. While theoretically it should not matter whether students are given money directly for studying or whether that money is given to their parents, studies suggest that who gets the money does matter for family decisionmaking. Providing parents with a benefit for their children's postsecondary education seemingly makes them more supportive of that endeavour.

From the provinces' perspective, but not the federal government's, it is also possible that tax credits could be seen as a way of encouraging people with postsecondary education to study and work in that province. That is because the combination of higher tuition fees and delayed tax credits in some provinces means that students who leave the province where they studied to work elsewhere could receive a lower subsidy than those who stayed. But if the goal is to boost the number of postsecondary graduates in the provincial labour force, the graduate retention tax credits that are currently in place in Saskatchewan, New Brunswick, Manitoba and Nova Scotia might be more effective.

These advantages could matter, but other elements in the design of the tax credits overwhelm them. And there would still be a question of whether the program objectives are best achieved by providing a larger subsidy to relatively well-off and price insensitive students than to less well-off and more price sensitive students.

Table 2 below lists the key features I recommend for an effective student financial aid program. It also assesses the performance of existing tax-credit features and the expected effectiveness of a proposed refundable regime. The features are drawn from standard and behavioural economic theory as well as the available empirical evidence referred to in this *Commentary*.

The current tax credit program is poorly understood, likely having the biggest effects on the most disadvantaged and potentially most price-responsive youth. Most young people likely get information on the costs and benefits of postsecondary education from their parents and peer groups rather than seeking out separate and more authoritative information on each program directly. A tax-credit program that is separate from major postsecondary financial aid programs, which is not targeted to price-responsive students, and which is not advertised outside of the tax forms, seems very unlikely to be effective in boosting enrolments.

These flaws are well-recognized. Virtually everyone who has paid attention to the tuition and education/textbook tax credits – including Collins and Davies (2003, 2005), Finnie, Usher and Voosensteyn (2005), Milligan (2002, 2005), Drummond (2008) and Essaji and Neill (2010, 2012), as well as a number of student organizations – has suggested that they do little good and should be removed, with the tax-expenditure savings used for programs more likely to aid needy students and increase enrolments.

CONCLUSIONS

Tuition and education/textbook tax credits face almost unanimous opposition from analysts who have paid close attention to them. This is not because of their aims, but rather because they are one of the least effective and least equitable ways of achieving those aims. Indeed, tax credits may well have no effect at all in boosting the numbers of Canadians with a postsecondary education. Economic theory, and available empirical evidence, suggest that the credits are distributed inequitably, and that they likely do little to boost enrolments. These conclusions are reinforced by some lessons learned from behavioral economics.

One of the biggest lessons from behavioral economics is that small differences in program design can have remarkably large effects on people's

Table 2: Summary of Features That Improve Student Aid Program Effectiveness

Feature	Why it Matters	Grade for:	
		Non-refundable Tax Credits	Refundable Tax Credits
Simple application process	Complexity all students, but especially vulnerable ones	A	A
Low administrative costs	Cost effectiveness	A	A
Well marketed/ incentives for marketing	Information failures; anchoring	D	D
Targeted to price responsive youth	Cost effectiveness	F	C
Targeted to disadvantaged students	Fair distribution	F	C
Funds provided early on, possibly before enrolment decision	Loss aversion; loan aversion; myopia, hyperbolic discounting; anchoring	F	C
Information on funding available early	Anchoring; information failures	C	C
Reduce riskiness of education investment	Risk aversion	D	D

Source: Author's compilation from standard and behavioral economic theory.

decisions. Seemingly small program design choices – such as making the credits non-refundable – could substantially reduce their effectiveness in boosting enrolments.

Clearly, the key advantage of the current tax-credit approach is its simplicity and low administrative costs. But having low administrative costs is not a virtue in a program that likely yields few economic benefits. Indeed, the evidence suggests that existing non-refundable tax credits provide upfront benefits to youth who are least price responsive and delay payments to those whose need is greater, are more price responsive and more likely averse to borrowing funds to finance postsecondary education. As well, behavioural economics tells us that even small delays in receiving benefits can make them worth much less to the recipients.

A system of refundable tax credits would have all the advantages of the existing credits, but fewer of their disadvantages. Still, a key concern over poor understanding of the current program would remain, unless accompanied by a major, ongoing marketing campaign. And the bulk of the funds spent on a refundable tax credit would still go to relatively advantaged students, not desirable on either equity or efficiency grounds. Nevertheless, a move to refundability would better target the use of government funds toward students who are more likely on the margin of attending postsecondary education and who believe it is unaffordable.

Such a move to refundability would require some upfront costs, since credit claims that would have been carried forward could be claimed immediately. This cost would be fairly minor, however, and only last for a few years at most.

Many analysts have suggested that governments could reduce the value of the tax credits in exchange for an increase in student-aid funding or a decrease in tuition fees, both of which would at least improve the timing of aid to students. Quebec recently

moved in this direction. Following student unrest in 2012, provincial student organizations suggested that a tuition fee freeze remain in place in return for the abolition of the tax credits (Schwartz and Gagnon 2012). The new Quebec government agreed to that tradeoff, with a reduction in the tuition tax-credit rate from 20 percent to 8 percent. The savings are to fund an increase in the provincial student aid program. Other provinces should consider following suit.

More radical policy changes should also be considered, perhaps even incorporating lessons from behavioural economics. One interesting policy suggestion came in the last federal election campaign. The Liberal Party proposed replacing the education credit with a direct deposit into RESPs for 14-to-17-year-old high school students. (For an analysis of this proposal, see the symposium in the *Canadian Tax Journal*, November 2012). The notion of depositing funds, even notionally, into an account earmarked for postsecondary education responds to the loss aversion and poor mental accounting tendencies that characterizes much behaviour when it comes to students' and families' postsecondary education decision-making. Providing the funds early also could help contribute to anchoring positive expectations of postsecondary enrolment among children. Together, these measures could influence more disadvantaged students to continue with their education.

For the moment, though, the trend seems to have been for the federal government to boost credits and for the provinces to introduce even more post-graduation tax benefits to postsecondary graduates in the form of graduate retention tax credits. This trend seems to be more for political than for evidence-based reasons. Perhaps the apparent political success of Quebec's policy change will stimulate other provinces and the federal government to evaluate more seriously their education and tuition tax-credit programs and make tuition and education tax credits refundable to better reach the students most likely to forego postsecondary education due to its perceived and immediate costs.

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